ANSAA-C

ANALYZER, SIGNATURE

1. GENERAL. This procurement requires a solid-state, four digit signature analyzer controllable via an IEEE STD 488-1978 General Purpose Interface Bus.

2. CLASSIFICATION. Type II, Class 6, Style E, and Color R in accordance with MIL-T-28800 for shipboard applications.

2.1 Electromagnetic interference requirements. The requirements of MIL-T-28800 are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (back panel search excluded), RE02 (14 kHz to 1 GHz), and RS03.

3. MEASUREMENT REQUIREMENTS. The equipment shall be capable of signature analysis within the clock, data, start, and stop specifications contained below. All specifications contained below shall be measured at the point of connection to the unit under test.

3.1 Signature generation. The signature displayed shall be identical to the signature generated by a 16-bit shift register with feedback given by the boolean logic equation:

SHIFT
REGISTER = [SIGNAL INPUT] $\oplus$ [(BIT 11 $\oplus$ BIT 15) $\oplus$ (BIT 6 $\oplus$ BIT 8)]
INPUT

     a. The SIGNAL INPUT refers to the serial data accessed by the probe and selected by the control signals.

     b. The BIT numbers refer to a shift register with 16 bits numbered from 0 to 15. BIT 0 receives the SHIFT REGISTER INPUT, and each clock pulse shifts the data one bit toward BIT 15, the most significant bit.

     c. The symbol $\oplus$ refers to the exclusive OR operation (or half-adder).

3.2 Signature data specifications. The signature analyzer shall be provided with a probe for data acquisition from the unit under test.

3.2.1 Data thresholds. The data threshold for a logic one shall be 2 ±0.4V and the threshold for a logic zero shall be 0.8 ±0.3V. Voltages above the logic one threshold shall be interpreted as a logic one and voltages below the logic zero threshold shall be interpreted as a logic zero.

3.2.2 Data input setup time. 15 ns or less relative to the active clock edge.

3.2.3 Hold time. Zero, relative to the active clock edge.

3.2.4 Data input pulse width. The minimum detectable data pulse width shall be 15 ns or less.

3.2.5 Data input overload protection. The data input overload protection shall be at least 150 Vdc continuous or 140 Vrms for one minute.

3.3 Clock, start, and stop signal specifications.

3.3.1   Clock, start, and stop thresholds.   The clock, start, and stop thresholds shall be 1.4 ±0.6V. The analyzer shall interpret voltages above the threshold as logic one and voltages below the threshold as logic zero. A means shall be provided to reverse the interpretation of either or both thresholds. When the interpretation is reversed, voltages above the threshold shall be interpreted as logic zero and voltages below the threshold as logic one.

3.3.2   Clock, start, and stop overload protection.   The clock, start, and stop overload protection shall be at least 20 Vdc.

3.3.3 Maximum clock frequency. 20 MHz or greater.

3.3.4 Minimum clock pulse width. 15 ns or less.

3.4   Input RC.   47 kilohms minimum shunted by 15 pF or less. The analyzer inputs shall pull tri-state buses either high or low.

3.5 Signature display. The signature display shall be composed of four alpha-numeric characters.

3.5.1   Signature display decoding.   The signature displayed shall be identical to a signature obtained by decoding the shift register bits as follows. The contents of the shift register may be considered as a binary number with bit zero as the least significant bit. The displayed signature is obtained by decoding the binary number as a hexadecimal number and making the following substitutions in the hexadecimal numbers. The hexadecimal B is displayed as C, C as F, D as H, E as P, and F as U.

4. GENERAL REQUIREMENTS.

4.1   Power source.   MIL-T-28800 nominal power source requirements are invoked. Maximum power consumption: 65W.

4.2 Weight. 10 kg (22 lb) maximum.

4.3 Digital interface. Digital interface in accordance with MIL-T-28800.

4.4   Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.